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Atlantic City International Airport
N.J. 08405

Statistics on Aircraft Gas Turbine Engine Rotor Failures that Occurred in U.S. Commercial Aviation during 1989

June 1992

Final Report

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16. Abstract

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This report presents statistical information relating to gas turbine engine rotor failures which occurred during 1989 in U.S. commercial aviation service use. Four hundred and thirty-five failures occurred in 1989. Rotor fragments were generated in 156 of the failures, and of these 24 were uncontained. The predominant failure involved blade fragments, 87 percent of which were contained. Eight disk failures occurred and six were uncontained. Thirty-six percent of the 435 failures occurred during the takeoff and climb stages of flight.

This service data analysis is prepared on a calendar-year basis and published yearly. The data are useful in support of flight safety analyses, proposed regulatory actions, certification standards, and cost benefit analyses.

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EXECUTIVE SUMMARY

This report presents statistical information relating to gas turbine engine rotor failures which occurred during 1989 in U.S. commercial aviation service use. This service data analysis is prepared on a calendar-year basis and published annually. The data support flight safety analyses, proposed regulatory actions, certification standards, and cost benefit analyses.

Four hundred thirty-five rotor failures occurred in 1989. Rotor fragments were generated in 156 of the failures and, of these, 24 were uncontained. This represents an uncontained failure rate of 1.1 per million gas turbine engine powered aircraft flight hours, or 0.5 per million engine operating hours. Approximately 22.0 million and 48.7 million aircraft flight and engine operating hours, respectively, were logged in 1989.

Turbine rotor fragment-producing failures were approximately 2 times greater than that of the compressor rotor fragment-producing failures; 99 and 50 respectively, of the total. Fan rotor failures accounted for 7 of the fragment-producing failures experienced.

Blade fragments were generated in 141 of the rotor failures; 18 of these were uncontained. The remaining 6 of the 24 uncontained failures were produced by disk fragments.

Of the 312 failures with known causes (because of the high percentage of unknown causes of rotor failures, the percentages were based on the total number of known causes), the causal factors were (1) foreign object damage -- 129 (41.3 percent); (2) secondary causes -- 77 (24.7 percent); and (3) design and life prediction problems -- 69 (22.1 percent). One hundred and fifty-five (35.6 percent) of the 435 rotor failures occurred during the takeoff and climb stages of flight. Seventy-eight (50.0 percent) of the 156 rotor fragment-producing failures and 9 (37.5 percent) of the 24 uncontained rotor failures occurred during these same stages of flight.

The incidence of engine rotor failures producing fragments has decreased when compared to 1988 (175 in 1988 and 156 in 1989). The number of uncontained engine rotor failures reported has increased 71 percent in 1989 (14 in 1988 and 24 in 1989). The 14-year (1976 through 1989) average of uncontained engine rotor failures is 15.6.

The higher incidences of uncontained rotor failures in calendar years 1967 through 1973 (except for 1968) were probably due to the introduction of newly developed engines entering the commercial aviation fleet, such as the JT9D and CF6 engines.

Structural life predictions and verification are being improved by the increased use of spin chamber testing by government and industry as a means of obtaining failure data for statistically significant examples. In addition, increased development and application of high sensitivity, nondestructive inspection methods should increase the probability of cracks being detected prior to failure. The capability to reduce the causes of failures from secondary effects is also being addressed through technology development programs. However, causes due to foreign object damage still appear to be beyond the control or scope of present technology.

INTRODUCTION

This report presents statistical information relating to gas turbine engine rotor failures which occurred during 1989 in U.S. commercial aviation service use. The FAA's Propulsion/Fuel Safety Program sponsors the data reduction and analysis support from the Naval Air Warfare Center and Galaxy Scientific Corporation.

This service data analysis is published yearly. The data support flight safety analyses, proposed regulatory actions, certification standards, and cost benefit analyses.

This report presents data as objectively as possible on gas turbine rotor failure occurrences in U.S. commercial aviation. Statistics are presented on gas turbine engine utilization and failures that have occurred in U.S. commercial aviation during 1989. These statistics are based on service data compiled by the FAA Flight Standards District Office reported in the Service Difficulty Reports (SDR) data base, the Accident/Incident Data System (AIDS), and the Air Carrier Aircraft Utilization and Propulsion Reliability Reports. The aircraft count was supplemented by the International Aircraft Operators System, a registry data system located out of Wichita State University. The FAA service data base contains only a fraction of the actual commercial helicopter fleet operating statistics. The number of turboshaft engines in use with the corresponding engine flight hours given herein are estimates derived primarily from statistics published by the Helicopter Association International in their helicopter annuals. The compiled data were analyzed to establish:

1. The incidence of rotor failures and the incidence of contained and uncontained rotor fragments (an uncontained rotor failure is defined as a rotor failure that produces fragments which penetrate and escape the confines of the engine casing).

2. The distribution of rotor failures with respect to engine rotor components, i.e., fan, compressor or turbine rotors and their rotating attachments or appendages such as spacers and seals.

3. The number of rotor failures according to engine model and engine fleet hours.

4. The type of rotor fragment (disk, rim, or blade) typically generated at failure.

5. The cause of failure.

6. The flight conditions at the time of failure.

7. Engine failure rate according to engine fleet hours.

RESULTS

The raw data used in this report are contained in Appendix A. The results of an analysis of the data are shown in figures 1 through 6 and tables 1 through 3.

Figure 1 shows that 435 rotor failures occurred in 1989. Rotor fragments were generated in 156 of the failures experienced and, of these, 24 (15.4 percent of the fragment-producing failures) were uncontained. This represents an uncontained failure rate of 1.1 per million gas turbine engine powered aircraft flight hours, or 0.5 per million engine operating hours.

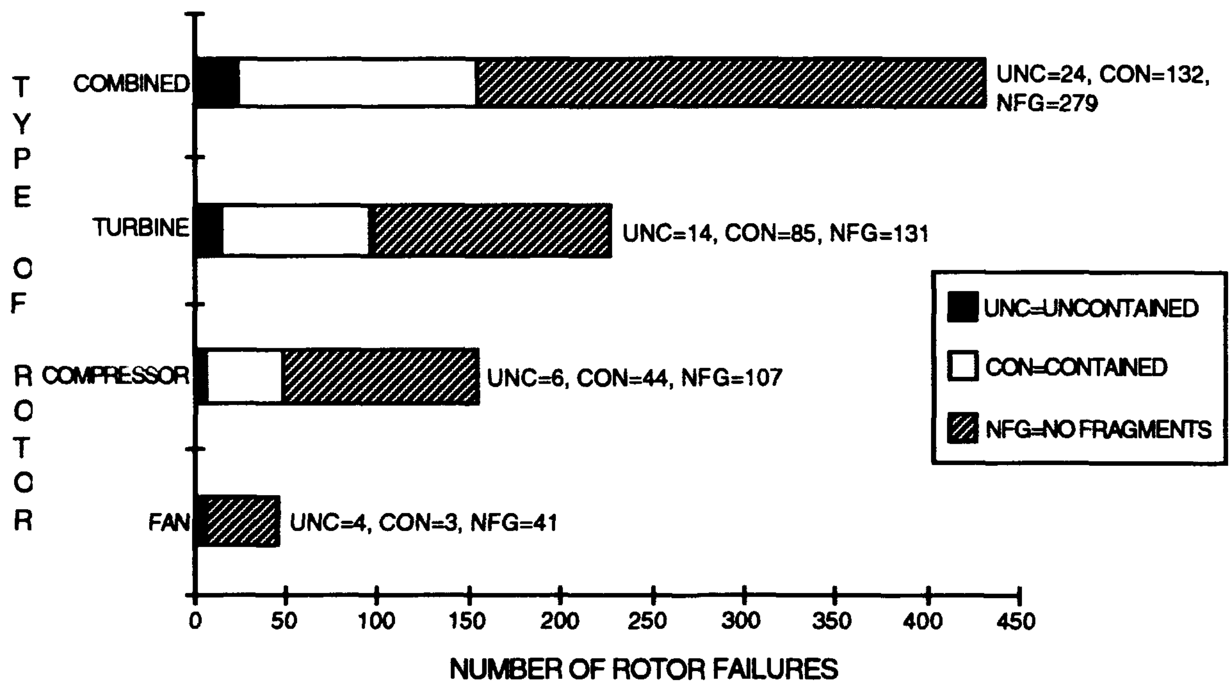

FIGURE 1. INCIDENCE OF ENGINE ROTOR FAILURES IN U.S. COMMERCIAL AVIATION - 1989

Approximately 22.0 million and 48.7 million aircraft flight and engine operating hours, respectively, were logged by the U.S. commercial aviation fleet in 1989. Gas turbine engine fleet operating hours relative to the number of rotor failures and type of engines in use are shown in figure 2.

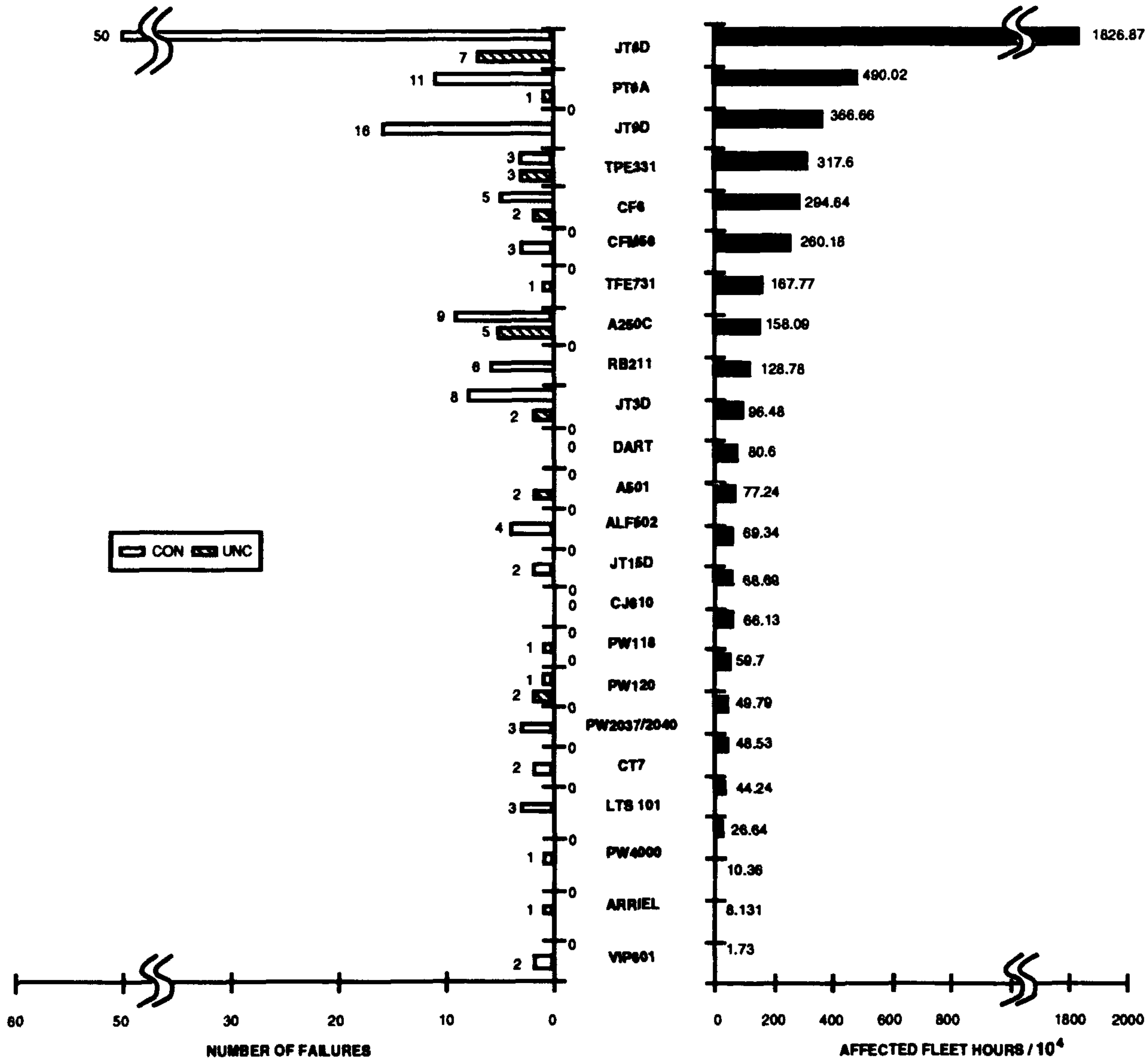

FIGURE 2. TYPE AND NUMBER OF ENGINE ROTOR FAILURES IN U.S. COMMERCIAL AVIATION ACCORDING TO AFFECTED ENGINE MODEL AND ENGINE FLEET HOURS 1989

Table 1 shows the distribution of rotor failures that produced fragments according to the engine component involved (fan, compressor, turbine), the type of fragments that were generated, and the uncontained failures according to the type of fragment generated. These data indicate that:

1. The incidence of turbine rotor failures generating fragments was approximately 2 times greater than that of the compressor rotor failures; these corresponded to 99 (63.5 percent) and 50 (32.1 percent), respectively, of the total number of fragment generating failures. Fan rotor failures accounted for 7 (4.5 percent) of the failures experienced.

2. Blade fragments were generated in 141 (90.4 percent) of the failures; 18 (12.7 percent) of these were uncontained. The remaining 15 (9.6 percent) failures were produced by the disk, rim, and seal. Six of the eight disk failures were uncontained. There were no uncontained rim or seal failures.

TABLE 1. COMPONENT AND FRAGMENT TYPE DISTRIBUTIONS FOR CONTAINED AND UNCONTAINED ENGINE ROTOR FAILURES (FAILURES THAT PRODUCED FRAGMENTS) - 1989

ENGINE ROTOR COMPONENTS	DISK		RIM		BLADE		SEAL		TOTAL	
	TOTAL FAIL	UNCONT. FAIL	TOTAL FAIL	UNCONT. FAIL	TOTAL FAIL	UNCONT. FAIL	TOTAL FAIL	UNCONT. FAIL	TOTAL FAIL	UNCONT. FAIL
FAN	1	1	0	0	6	3	0	0	7	4
COMPRESSOR	2	1	0	0	45	5	3	0	50	6
TURBINE	5	4	1	0	90	10	3	0	99	14
TOTAL	8	6	1	0	141	18	6	0	156	24

Figure 3 shows the rotor failures generating fragments distributed among the engine models affected and the total number of models in use.

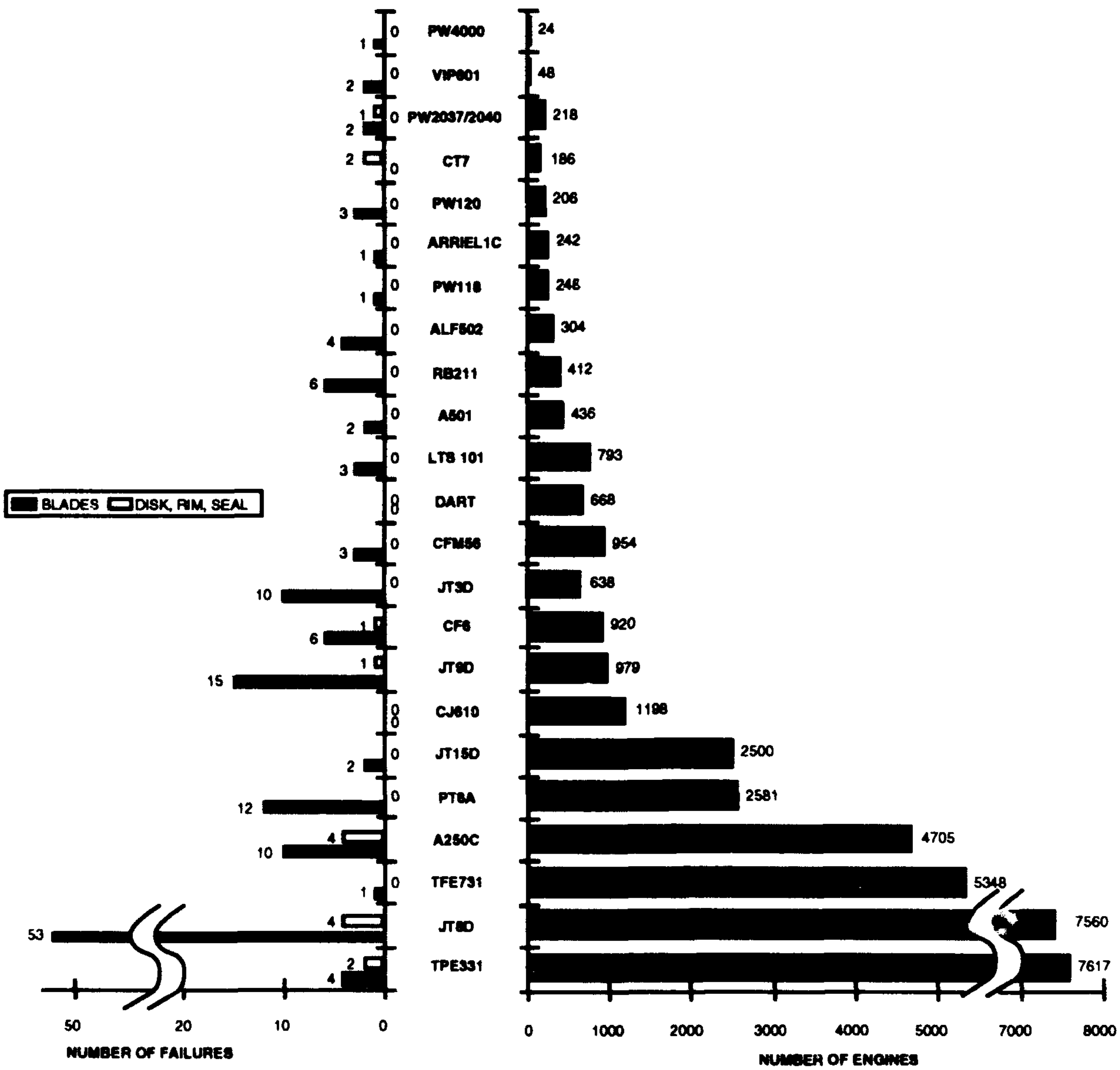

FIGURE 3. THE INCIDENCE OF ENGINE ROTOR FAILURES (THAT PRODUCED FRAGMENTS) IN U.S. COMMERCIAL AVIATION ACCORDING TO THE NUMBER OF ENGINE MODELS AND COMPONENTS AFFECTED - 1989

Figure 4 shows what caused the rotor failures to occur. Of the 312 failures with known causes (because of the high percentage of unknown causes of rotor failure, the percentages were based on the total number of known causes), the causal factors were (1) foreign object damage -- 129 (41.3 percent); (2) secondary causes -- 77 (24.7 percent); and (3) design and life prediction problems -- 69 (22.1 percent).

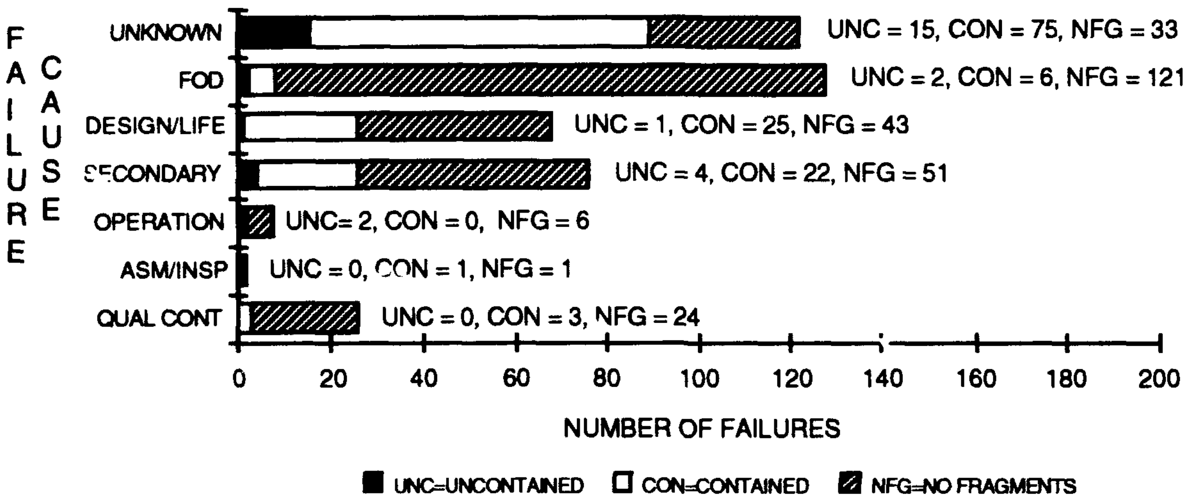

FIGURE 4. ENGINE ROTOR FAILURE CAUSE CATEGORIES - 1989

Figure 5 indicates the flight conditions that existed when the various rotor failures occurred. One hundred and fifty-five (35.6 percent) of the 435 rotor failures occurred during the takeoff and climb stages of flight. Seventy-eight (50.0 percent) of the rotor fragment-producing failures and 9 (37.5 percent) of the uncontained rotor failures occurred during these same stages of flight. The highest number of uncontained rotor failures, 10 (41.7 percent), happened during the cruising portion of the flight.

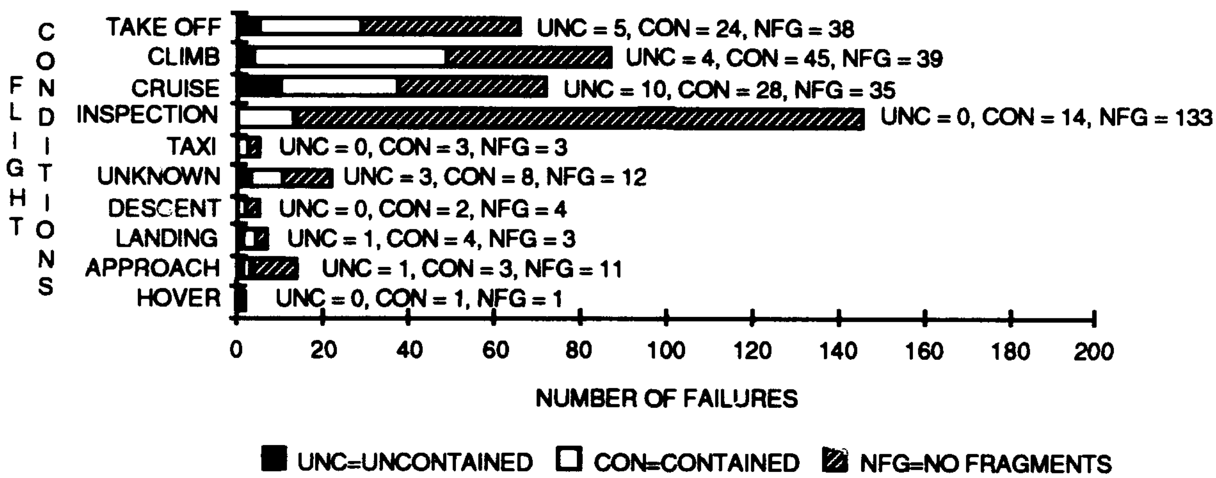

FIGURE 5. FLIGHT CONDITION AT ENGINE ROTOR FAILURE - 1989

Table 2 contains a compilation of engine failure rates per million engine flight hours according to engine model, engine type, and containment conditions. The engine failure rates per million flight hours by engine type are turbofan -- 7.4, turboprop -- 6.9, and turboshaft -- 42.8. Uncontained engine failure rates per million flight hours by engine type were turbofan -- 0.32, turboprop -- 0.67, and turboshaft -- 2.18.

TABLE 2. GAS TURBINE ENGINE FAILURE RATES ACCORDING TO ENGINE MODEL AND TYPE - 1989

TYPE/ MODEL	AVERAGE NUMBER IN USE**	ENGINE FLIGHT HRS. $x10^6$	NO. OF FAILURES				FAIL. RATES/10^6 ENGINE FLIGHT HRS.			
			C*	NC	N*	TOTAL	C	NC	N	TOTAL
TURBOFAN/ TURBOJET										
JT8D	7560	18.2687	50	7	47	104	2.74	0.38	2.57	5.69
JT3D	638	0.9648	8	2	8	18	8.29	2.07	8.29	18.66
JT9D	979	3.6666	16	0	21	37	4.36	0.00	5.73	10.09
CF6	920	2.9464	5	2	3	10	1.70	0.68	1.02	3.39
RB211	412	1.2878	6	0	6	12	4.66	0.00	4.66	9.32
PW2037/2040	218	0.4853	3	0	3	6	6.18	0.00	6.18	12.36
TFE731	5348	1.6777	1	0	2	3	0.60	0.00	1.19	1.79
CFM56	954	2.6018	3	0	21	24	1.15	0.00	8.07	9.22
ALF502	304	0.6934	4	0	10	14	5.77	0.00	14.42	20.19
JT15D	2500	0.6869	2	0	11	13	2.91	0.00	16.01	18.93
PW4000	24	0.1036	1	0	1	2	9.65	0.00	9.65	19.31
CJ610	1198	0.6613	0	0	2	2	0.00	0.00	3.02	3.02
VIP601	48	0.0173	2	0	1	3	115.61	0.00	57.80	173.41
OTHERS	2291	0.4123	0	0	7	7	0.00	0.00	16.98	16.98
TOTAL	23394	34.4733	101	11	143	255	2.93	0.32	4.15	7.40
TURBOPROP										
PT6A	2581	4.9002	11	1	15	27	2.24	0.20	3.06	5.51
A501	436	0.7724	0	2	5		0.00	2.59	6.47	9.06
TPE331	7617	3.176	3	3	30	36	0.94	0.94	9.45	11.34
DART	668	0.806	0	0	1	1	0.00	0.00	1.24	1.24
PW120	206	0.4979	1	2	1	4	2.01	4.02	2.01	8.03
CT7	186	0.4424	2	0	4	6	4.52	0.00	9.04	13.56
PW118	248	0.597	1	0	0	1	1.68	0.00	0.00	1.68
OTHERS	641	0.7692	0	0	0	0	0.00	0.00	0.00	0.00
TOTAL	12583	11.9611	18	8	56	82	1.50	0.67	4.68	6.86
TURBOSHAFT										
A250C	4705	1.5809	9	5	55	69	5.69	3.16	34.79	43.65
LTS 101	793	0.2664	3	0	24	27	11.26	0.00	90.09	101.35
ARRIEL	242	0.0813	1	0	1	2	12.30	0.00	12.30	24.60
OTHERS	1072	0.3602	0	0	0	0	0.00	0.00	0.00	0.00
TOTAL	6812	2.2888	13	5	80	98	5.68	2.18	34.95	42.82

C = CONTAINED NC = NOT CONTAINED
N = FUNCTION IMPEDED, NO FRAGMENTS GENERATED

*As reported by service difficulty reports only.

**Estimated total number in use and engine flight hours for entire U.S. commercial fleet.

Table 3 is a cumulative tabulation that describes the distribution of uncontained rotor failures according to fragment type, engine component involved, cause category, and flight condition (takeoff and climb are defined as "high power," all other conditions are defined as "low power") for the years 1976 through 1989. This figure is expanded yearly to include all subsequent uncontained rotor failures. These data indicate that for "secondary causes" the number of uncontained failures was approximately three times greater at high power than low power (namely 35 and 12). For "design and life prediction problems" the number of high power uncontained failures was approximately three times greater than low power (namely 33 and 9); and for "foreign object damage" the number of uncontained failures was approximately three times greater at high power than low power (namely 10 and 3). This tabulation also indicates that of the 218 total uncontained incidences, blade failures accounted for 67.4 percent; disk failures 23.4 percent; rim failures 3.7 percent; and seal/spacer failures 5.5 percent.

TABLE 3. UNCONTAINED ENGINE ROTOR FAILURE DISTRIBUTIONS ACCORDING TO CAUSE AND FLIGHT CONDITIONS - 1976 TO 1989

TYPE OF FRAGMENT GENERATED		DISK			RIM			BLADE			SEAL				
ENGINE ROTOR COMPONENT		FAN	COMP	TURB	FAN	COMP	TURB	FAN	COMP	TURB	FAN	COMP	TURB	SUB TOT	TOTAL
CAUSE	FLIGHT COND.*														
DESIGN/LIFE	HI	1	5	0	0	3	0	9	10	4	0	1	0	33	
PREDICTION	LOW	0	1	3	0	0	0	1	0	4	0	0	0	9	42
PROBLEMS	UNK	0	0	0	0	0	0	0	0	0	0	0	0	0	
SECONDARY	HI	0	1	1	0	0	0	5	4	21	0	0	3	35	
CAUSES	LOW	0	0	1	0	0	0	0	4	7	0	0	0	12	50
	UNK	0	0	0	0	0	0	1	0	2	0	0	0	3	
FOREIGN	HI	1	0	1	0	0	0	7	0	1	0	0	0	10	
OBJECT	LOW	0	0	0	0	0	0	2	0	1	0	0	0	3	15
DAMAGE	UNK	0	0	0	0	0	0	2	0	0	0	0	0	2	
QUALITY	HI	0	1	0	0	0	1	2	0	0	0	0	0	4	
CONTROL	LOW	0	0	0	0	0	0	0	0	0	0	0	0	0	4
	UNK	0	0	0	0	0	0	0	0	0	0	0	0	0	
OPERATIONAL	HI	0	0	0	0	0	0	0	0	0	0	0	0	0	
	LOW	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	UNK	0	0	2	0	0	0	0	0	0	0	0	0	2	
ASSEMBLY/	HI	0	0	1	0	0	0	0	0	1	0	0	0	2	
INSP.	LOW	0	0	1	0	0	0	0	0	0	0	0	0	1	3
REPORTS	UNK	0	0	0	0	0	0	0	0	0	0	0	0	0	
UNKNOWN	HI	1	3	12	0	3	0	8	11	16	1	2	3	60	
	LOW	2	0	12	0	1	0	0	4	15	0	1	1	36	102
	UNK	0	0	1	0	0	0	1	0	4	0	0	0	6	
SUBTOTAL	HI	3	10	15	0	6	1	31	25	43	1	3	6	144	
	LOW	2	1	17	0	1	0	3	8	27	0	1	1	61	218
	UNK	0	0	3	0	0	0	4	0	6	0	0	0	13	
TOTAL			51			8			147			12		218	

*Takeoff and climb are defined as "High Power" and all other conditions are defined as "Low Power".

Figure 6 shows the annual incidence of uncontained rotor failures in U.S. commercial aviation for the years 1963 through 1989. During 1989, the incidence of uncontained rotor failures increased by ten over the previous year. Over the past 14 years, 1976 through 1989, an average of 15.6 uncontained rotor failures per year have occurred. During the same time period, the rate of uncontained rotor failures has remained relatively constant at an average of approximately one per million operating hours. Note the incidences of uncontained failures reported by the AIDS data base that were not included in the SDR's (see Introduction).

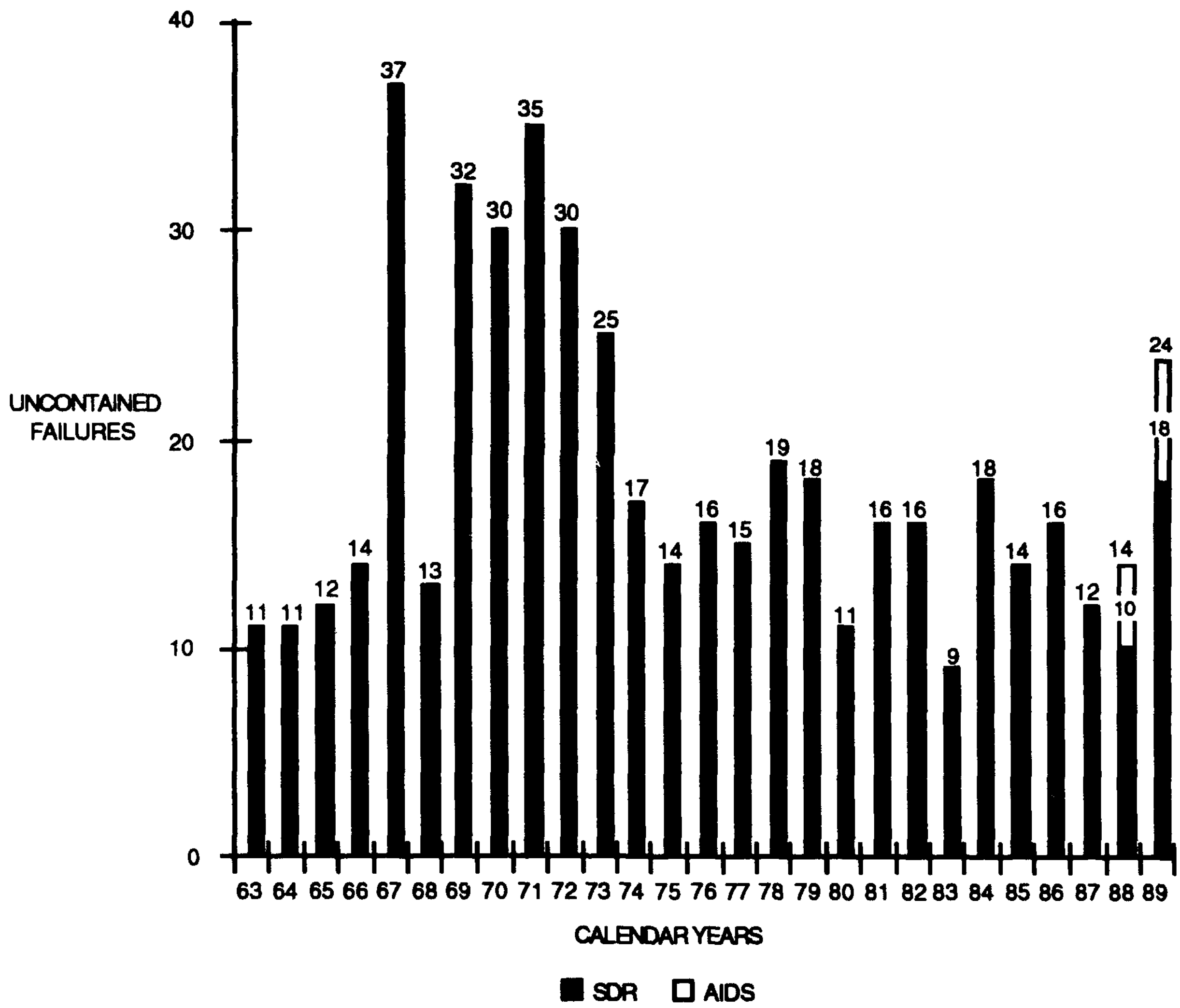

FIGURE 6. THE INCIDENCE OF UNCONTAINED ENGINE ROTOR FAILURES IN U.S. COMMERCIAL AVIATION, 1963 THROUGH 1989

DISCUSSION AND CONCLUSIONS

The incidence of engine rotor fragment-producing failures has remained relatively constant when comparing 1989 to 1988 (175 in 1988 and 156 in 1989). The reported uncontained engine rotor failures has increased 71 percent (24 in 1989 and 14 in 1988). The 14-year (1976 through 1989) average of uncontained engine rotor failures is 15.6.

Of the 24 uncontained events that occurred during 1989, 14 (58.3 percent) involved turbine rotors, and 6 (25 percent) involved compressor rotors. There were 4 uncontained fan rotor failures reported.

The predominant cause of failure was attributed to foreign object damage (41.3 percent of the known failures). One uncontained failure occurred in this category. Secondary causes (24.7 percent of the known failures) had four uncontained failures and design and life prediction problems (22.1 percent of the known causes) had one uncontained failure. Assembly and inspection error had two uncontained failures. The causes of the remaining fifteen uncontained failures (62.5 percent) are unknown.

Uncontained failures occurred in 5 of the 8 flight modes (including taxi); i.e., 5 during takeoff (20.8 percent); 4 during climb (16.7 percent); 10 in cruise (41.7 percent); 1 in landing (4.2 percent); 1 in approach (4.2 percent), and 3 were unknown (12.5 percent).

The higher incidences of uncontained rotor failures in calendar years 1967 through 1973 (except for 1968) were probably due to the introduction of newly developed engines entering the commercial aviation fleet, such as the JT9D and CF6 engines.

Structural life predictions and verification are being improved by the increased use of spin chamber testing by government and industry as a means of obtaining failure data for statistically significant samples. In addition, increased development and application of high sensitivity, nondestructive inspection methods should increase the probability of cracks being detected prior to failure. The capability to reduce the causes of failures from secondary effects is also being addressed through technology development programs. However, causes due to foreign object damage still appear to be beyond the control or scope of present technology.

APPENDIX A

Data of Engine Rotor Failures in U.S. Commercial Aviation for 1989. Compiled from the Federal Aviation Administration Service Difficulty Reports and the Accident Incident Data System.

Data Compilation Key

Component Code:
- F - Fan
- C - Compressor
- T - Turbine

Fragment Type Code:
- D - Disk
- R - Rim
- B - Blade
- S - Seal
- N - None

Cause Code:
- 1 - Design and Life Prediction Problems
- 2 - Secondary Causes
- 3 - Foreign Object Damage
- 4 - Quality Control
- 5 - Operational
- 6 - Assembly and Inspection Error
- 7 - Unknown

Containment Condition Code:
- C - Contained
- NC - Not Contained
- N - No Fragments Generated

Flight Condition Code:
- 1 - Insp/Maint
- 2 - Taxi/Grnd Hdl
- 3 - Takeoff
- 4 - Climb
- 5 - Cruise
- 6 - Descent
- 7 - Approach
- 8 - Landing
- 9 - Hovering
- 10 - Unknown

Report Source - Number
- S - SDR
- A - AIDS
- X - Other

CHARACTERISTICS OF ROTOR FAILURES - 1989

REPORT NO.	SUBMIT.	AIRCRAFT	ENGINE/ POSITION	COMPNT	FRAG. TYPE	CAUSE	CONTN. COND	FLT. COND
S-890224016	DALA	B727	JT8D	C	B	2	C	4
S-890224018	FDEA	B727	JT8D	T	B	7	C	4
S-890224065	PAAA	B727	JT8D	T	B	7	C	4
S-890303029	CALA	B737	JT8D	T	B	7	C	3
S-890317010	MRKA	B737	JT8D	T	B	1	C	5
S-890414106	DALA	DC9	JT8D	T	B	2	C	3
S-890421020	UALA	B727	JT8D	T	B	1	C	5
S-890421032	DALA	B727	JT8D	T	B	1	C	3
S-890428022	NWAA	B727	JT8D	C	B	7	C	5
S-890428029	DALA	B727	JT8D	F	B	1	C	3
S-890428040	TWAA	DC9	JT8D	C	B	3	C	5
S-890505009	USAA	B737	JT8D	C	B	7	C	4
S-890512039	DALA	DC9	JT8D	T	B	1	C	4
S-890519070	DALA	B727	JT8D	T	B	1	C	4
S-890602009	SWAA	B737	JT8D	T	B	7	C	3
S-890609009	NWAA	B727	JT8D	C	B	1	C	4
S-890612120	MIDA	DC9	JT8D	T	B	7	C	4
S-890616064	DALA	B727	JT8D/3	T	B	1	NC	4
S-890616019	UALA	B727	JT8D/3	C	B	7	NC	3
S-890623016	MRKA	B737	JT8D	T	B	7	C	10
S-890714003	AMTA	B727	JT8D	C	B	7	C	5
S-890717200	NWAA	B727	JT8D/1	F	B	7	NC	3
S-890721066	USAA	DC9	JT8D	T	B	7	C	4
S-890721032	CALA	DC9	JT8D	T	B	7	C	4
S-890811020	AALA	B727	JT8D	F	B	1	C	4
S-890818001	NWAA	DC9	JT8D	C	B	1	C	4
S-890818020	TWAA	DC9	JT8D	C	B	2	C	4
S-890908021	TWAA	DC9	JT8D	T	B	7	C	5
S-890915005	NWAA	B727	JT8D	C	B	1	C	4
S-890915009	NWAA	B727	JT8D	T	S	7	C	4
S-890922060	EALA	DC9	JT8D	T	B	7	C	4
S-890922015	CALA	DC9	JT8D	T	B	7	C	4
S-890922028	NWAA	DC9	JT8D	C	B	2	C	4
S-89102700015	NWAA	B727	JT8D	C	B	2	C	5
S-89102700031	FDEA	B727	JT8D	T	B	7	C	4
S-89102700017	NWAA	DC9	JT8D	T	B	2	C	4
S-89102700091	CALA	B727	JT8D	C	B	7	C	5
S-89111700041	EALA	B727	JT8D	T	B	2	C	4
S-89122900053	PJXA	B727	JT8D/1	T	B	3	NC	5
S-890929009	USAA	B727	JT8D	T	B	7	C	5
S-89120800054	DALA	MD88	JT8D	T	B	3	C	6
S-89120100027	DALA	B727	JT8D	C	B	2	C	4
S-90010500037	TWAA	DC9	JT8D	T	B	7	C	4
S-90011900027	EALA	B727	JT8D	C	B	2	C	4
S-90011900038	USAA	DC9	JT8D	T	B	1	C	5
S-90011900046	USAA	DC9	JT8D	T	B	1	C	4
S-89112400052	SWAA	B737	JT8D	T	B	1	C	3
S-890517004	SW05	B737	JT8D	C	S	7	C	1
S-890517008	SW05	DC9	JT8D	C	B	7	C	1

REPORT NO.	SUBMIT.	AIRCRAFT	ENGINE/ POSITION	COMPNT	FRAG. TYPE	CAUSE	CONTN. COND	FLT. COND
S-890517005	SW05	B737	JT8D	T	B	7	C	1
S-890505083	PAIA	B727	JT8D	T	B	7	C	3
S-890317009	MRKA	B737	JT8D	T	B	7	C	5
S-890711088	MRKA	B737	JT8D	T	B	2	C	3
S-891124052	SWAA	B737	JT8D	T	B	7	C	3
S-890421025	UALA	B727	JT8D	F	N	3	N	4
S-890207078	FDEA	B727	JT8D	F	N	3	N	1
S-890221162	TSAA	B737	JT8D	F	N	3	N	3
S-890303067	PAIA	B737	JT8D	F	N	3	N	4
S-890306094	NWAA	B727	JT8D	F	N	3	N	4
S-890306195	EIAA	DC9	JT8D	F	N	3	N	7
S-890324092	GNAB	DC9	JT8D	C	N	3	N	1
S-890410056	FDEA	B727	JT8D	F	N	3	N	1
S-890410057	FDEA	B727	JT8D	F	N	3	N	1
S-890414132	HALA	DC9	JT8D	F	N	7	N	3
S-890505115	FDEA	B727	JT8D	C	N	3	N	1
S-890505040	UALA	B737	JT8D	T	N	3	N	4
S-890505083	PAIA	B727	JT8D	T	N	7	N	3
S-890619034	USAA	DC9	JT8D	F	N	3	N	7
S-890707108	MRKA	B737	JT8D	F	N	3	N	4
S-890721103	MRKA	B737	JT8D	C	N	3	N	4
S-890728015	UALA	B727	JT8D	C	N	7	N	3
S-890623013	MIDA	DC9	JT8D	C	N	3	N	.4
S-890818022	SWAA	B737	JT8D	C	N	3	N	3
S-890908054	CAKA	DC9	JT8D	C	N	3	N	6
S-890922013	CALA	B727	JT8D	T	N	7	N	3
S-890925074	NWAA	B727	JT8D	C	N	3	N	5
S-890922177	NWAA	DC9	JT8D	C	N	3	N	4
S-89100600092	NWAA	DC9	JT8D	C	N	3	N	3
S-89100600159	AWXA	B737	JT8D	C	N	3	N	3
S-89101300237	USAA	B737	JT8D	F	N	3	N	4
S-89102000013	UALA	B737	JT8D	C	N	3	N	5
S-89102000036	USAA	B737	JT8D	C	N	3	N	8
S-90010500095	USAA	DC9	JT8D	F	N	3	N	3
S-90010500041	CALA	DC9	JT8D	F	N	3	N	4
S-90012600001	EALA	B727	JT8D	C	N	3	N	4
S-90020200051	NWAA	B727	JT8D	F	N	3	N	4
S-90011900057	UALA	B727	JT8D	C	N	7	N	4
S-890327039	PAAA	B727	JT8D	C	N	3	N	3
S-891226178	SWAA	B737	JT8D	C	N	3	N	4
S-891103076	MIDA	B737	JT8D	C	N	3	N	3
S-890120165	MRKA	B737	JT8D	C	N	3	N	6
S-891122092	EU51	B737	JT8D	F	N	3	N	3
S-890130039	MIDA	B737	JT8D	C	N	3	N	10
S-890213003	USAA	DC9	JT8D	C	N	3	N	3
S-890525086	SW07	B727	JT8D	C	N	3	N	1
S-890518120	SW07	B727	JT8D	F	N	3	N	1
S-890518119	SW07	B727	JT8D	F	N	3	N	1
S-890421025	UALA	B727	JT8D	F	N	3	N	5
S-890818020	TWAA	DC9	JT8D	C	N	2	N	4
S-890804029	DALA	B727	JT8D	T	N	2	N	4

REPORT NO.	SUBMIT.	AIRCRAFT	ENGINE/ POSITION	COMPNT	FRAG. TYPE	CAUSE	CONTN. COND	FLT. COND
S-890721085	EISA	B727	JT8D	T	N	7	N	4
S-890203034	UALA	B747	JT9D	T	B	7	C	4
S-890203025	UALA	B747	JT9D	T	B	7	C	3
S-890424011	FTLA	B747	JT9D	F	B	3	C	8
S-890424249	UALA	B767	JT9D	C	B	7	C	7
S-890505060	UALA	B747	JT9D	T	B	2	C	4
S-890623022	PAAA	A310	JT9D	C	B	7	C	3
S-890728037	PAAA	A310	JT9D	C	B	7	C	4
S-890908012	TWAA	B747	JT9D	C	S	4	C	4
S-89110300036	PAAA	A310	JT9D	T	B	7	C	4
S-89111300059	UALA	B747	JT9D	T	B	7	C	4
S-89120100130	PAAA	B747	JT9D	C	B	2	C	4
S-90011200068	NWAA	B747	JT9D	C	B	1	C	4
S-90011900030	CALA	B747	JT9D	T	B	1	C	10
S-90020500363	PAAA	B747	JT9D	C	B	3	C	4
S-890327257	PAAA	B747	JT9D	C	B	7	C	4
S-890922002	NWAA	B747	JT9D	C	B	2	C	5
S-890303015	TWAA	B747	JT9D	C	N	7	N	10
S-890421055	NWAA	DC10	JT9D	C	N	3	N	5
S-890519030	TWAA	B767	JT9D	C	N	2	N	5
S-890530301	NWAA	B747	JT9D	F	N	2	N	3
S-890714004	NWAA	B747	JT9D	T	N	2	N	4
S-890721086	NWAA	B747	JT9D	C	N	3	N	5
S-890804027	NWAA	B747	JT9D	C	N	2	N	5
S-890804024	NWAA	B747	JT9D	T	N	5	N	5
S-890811021	TWAA	B767	JT9D	C	N	3	N	4
S-890821207	NWAA	B747	JT9D	F	N	2	N	4
S-890908014	TWAA	B747	JT9D	C	N	3	N	4
S-890929331	FDEA	B747	JT9D	F	N	3	N	4
S-89102300051	UALA	B767	JT9D	T	N	2	N	3
S-89111300018	NWAA	B747	JT9D	T	N	2	N	5
S-89120100044	PAAA	A310	JT9D	C	N	3	N	3
S-89121500187	NWAA	B747	JT9D	F	N	3	N	4
S-90011200060	TWAA	B767	JT9D	C	N	3	N	5
S-891201030	NWAA	DC10	JT9D	C	N	3	N	3
S-890508197	NWAA	DC10	JT9D	F	N	2	N	4
S-890127042	TWAA	B767	JT9D	C	N	3	N	5
S-890920009	SW99	B747	JT9D	T	N	1	N	5
S-891227082	WP13	AS350	LTS101	T	B	7	C	8
S-890209024	WP13	AS350	LTS101	T	B	4	C	5
S-890928029	SO17	AS350	LTS101	C	B	1	C	5
S-890706204	NMO7	BK117	LTS101	T	N	1	N	1
S-890126170	GL07	BK117	LTS101	T	N	1	N	1
S-890207122	SW03	BK117	LTS101	C	N	6	N	1
S-890803134	WP07	BK117	LTS101	C	N	7	N	3
S-890822127	SW03	BELL222B	LTS101	T	N	1	N	1
S-890216007	EA25	AS350	LTS101	T	N	1	N	1
S-890614133	GL13	BK117	LTS101	T	N	1	N	1
S-890628034	GL13	BK117	LTS101	T	N	1	N	1
S-890905031	GL13	BK117	LTS101	T	N	1	N	1
S-890710113	WP07	BK117	LTS101	T	N	1	N	1

REPORT NO.	SUBMIT.	AIRCRAFT	ENGINE/ POSITION	COMPNT	FRAG. TYPE	CAUSE	CONTN. COND	FLT. COND
S-890710107	NM07	BK117	LTS101	T	N	2	N	1
S-890706207	GL13	BK117	LTS101	T	N	1	N	1
S-890208102	GL13	BK117	LTS101	T	N	1	N	1
S-890208023	NM07	BK117	LTS101	T	N	1	N	1
S-890209037	GL13	UNK	LTS101	T	N	1	N	1
S-890202058	NM07	BK117	LTS101	T	N	1	N	1
S-890202083	NM07	BK117	LTS101	T	N	3	N	1
S-890830137	WP07	BK117	LTS101	T	N	1	N	1
S-890906165	NM07	BK117	LTS101	T	N	1	N	1
S-890906166	NM07	BK117	LTS101	T	N	1	N	1
S-890906167	NM07	BK117	LTS101	T	N	1	N	1
S-891213066	EA25	BELL222	LTS101	T	N	1	N	1
S-890803126	EA25	BELL222	LTS101	T	N	1	N	1
S-890112012	SW09	BELL222	LTS101	T	N	1	N	5
S-89050500035	SWAA	B737	CFM56	C	B	7	C	7
S-89100600032	FDEA	DC8	CFM56	C	B	7	C	4
S-89101300033	CALA	B737	CFM56	T	B	2	C	10
S-890213146	IPXA	DC8	CFM56	C	N	1	N	1
S-890217036	CALA	B737	CFM56	C	N	3	N	10
S-890313185	TSAA	B737	CFM56	F	N	3	N	4
S-890403005	IPXA	DC8	CFM56	C	N	3	N	1
S-890428096	RAXA	DC8	CFM56	C	N	1	N	1
S-890501248	RAXA	DC8	CFM56	C	N	1	N	1
S-890526099	AWXA	B737	CFM56	C	N	3	N	2
S-890526227	CALA	B737	CFM56	F	N	3	N	10
S-890915078	IPXA	DC8	CFM56	C	N	1	N	1
S-89100600195	IPXA	DC8	CFM56	C	N	7	N	1
S-89110300040	IPXA	DC8	CFM56	C	N	1	N	1
S-90012300165	USAA	B737	CFM56	F	N	3	N	3
S-90022300132	AWXA	B737	CFM56	C	N	3	N	4
S-890130060	SWAA	B737	CFM56	F	N	3	N	4
S-890113175	PAIA	B737	CFM56	F	N	3	N	5
S-890123067	SWAA	B737	CFM56	C	N	3	N	3
S-891025007	SW07	DC8	CFM56	C	N	1	N	1
S-890919069	SW07	DC8	CFM56	C	N	1	N	1
S-891003096	SW07	DC8	CFM56	C	N	3	N	1
S-890130213	SW07	DC8	CFM56	F	N	3	N	1
S-890302073	SW07	DC8	CFM56	T	N	1	N	1
S-890223093	EA03	B100	TPE331/UNK	T	D	5	NC	10
S-890105203	ABXA	B100	TPE331/RGT	T	D	5	NC	10
S-891122067	GL25	SA227	TPE331	T	B	2	C	10
S-890208073	RAIA	SA226	TPE331	T	B	1	C	8
S-890420023	MEJA	SA227	TPE331	T	B	7	C	1
S-890807002	NAXA	3101	TPE331	C	N	3	N	1
S-890515195	NAXA	3101	TPE331	T	N	3	N	10
S-890522096	VNAA	3101	TPE331	C	N	3	N	3
S-890612085	NAXA	3101	TPE331	T	N	2	N	1
S-890807091	NAXA	3101	TPE331	C	N	2	N	10
S-890807001	NAXA	3101	TPE331	C	N	3	N	10
S-890807128	NAXA	3101	TPE331	T	N	3	N	10
S-890818044	VNAA	3101	TPE331	T	N	3	N	3

REPORT NO.	SUBMIT.	AIRCRAFT	ENGINE/ POSITION	COMPNT	FRAG. TYPE	CAUSE	CONTN. COND	FLT. COND
S-890825135	VNAA	3101	TPE331	C	N	3	N	7
S-890915117	VNAA	3101	TPE331	C	N	3	N	2
S-890922046	PDLA	3101	TPE331	T	N	2	N	8
S-890929218	VNAA	3101	TPE331	C	N	3	N	1
S-89101600038	VNAA	3101	TPE331	C	N	3	N	7
S-89101300082	NAXA	3101	TPE331	T	N	3	N	1
S-89110600084	NAXA	3101	TPE331	T	N	3	N	1
S-89120800275	PDLA	3101	TPE331	T	N	5	N	3
S-89121800043	VNAA	3101	TPE331	T	N	7	N	3
S-890614161	NAXA	3101	TPE331	C	N	3	N	5
S-890113241	CPLA	3101	TPE331	C	N	3	N	3
S-890123052	VNAA	3101	TPE331	C	N	3	N	3
S-890106046	FBAA	D0228	TPE331	C	N	3	N	7
S-890914008	MALA	SA227	TPE331	C	N	3	N	7
S-890720019	WWMA	SA227	TPE331	C	N	3	N	6
S-890608117	WWMA	SA227	TPE331	C	N	3	N	8
S-890710147	WWMA	SA227	TPE331	C	N	3	N	6
S-890803256	MEJA	SA227	TPE331	C	N	3	N	3
S-890710170	DHLA	SA227	TPE331	C	N	3	N	7
S-890216085	BRIA	SA226	TPE331	C	N	3	N	7
S-890126019	NVEA	SA227	TPE331	C	N	3	N	10
S-890807002	NAXA	3101	TPE331	C	N	3	N	1
S-890124017	NM01	MU2B	TFE331	T	N	2	N	1
S-890728178	NAXA	3101	TFE331	T	N	3	N	1
S-891106084	NAXA	3101	TFE331	T	N	3	N	1
S-891013082	NAXA	3101	TFE331	T	N	3	N	1
S-890816035	RAIA	SA226	TFE331	T	N	2	N	1
S-891122096	RAIA	SA227	TFE331	T	N	5	N	3
S-890525111	SWIA	SA227	TFE331	T	N	5	N	5
S-890728023	HNAA	DHC8	PW120	T	B	7	C	3
S-890901008	PAYA	ATR423	PW120/UNK	T	B	2	NC	5
S-89122200022	CAIA	ATR423	PW120/1	T	B	7	NC	10
S-890714001	QXEA	DHC8	PW120	T	N	7	N	5
S-89102000022	SWIA	EMB120	PW118	T	B	2	C	10
S-891011180	SW03	S76	250C	T	B	7	C	1
S-891214074	SOO3	S76	250C	T	B	7	C	1
S-890215025	EA17	UNK	250C	T	B	4	C	5
S-890706022	SW03	S76	250C	T	B	7	C	8
S-890620007	SW03	BELL206	250C	T	D	7	C	9
S-890822117	SW03	BELL206	250C	T	R	7	C	5
S-890905029	GL13	A109	250C	C	B	7	C	1
S-890615070	SW03	BELL206	250C	C	B	7	C	1
S-890314012	SO15	BELL206	250C	T	D	7	NC	7
S-890321113	SW03	AS355	250C	C	B	7	NC	5
S-890321112	SW03	BELL206	250C	C	B	2	NC	5
S-891221025	SW03	B0105	250C	C	B	2	NC	5
S-891205006	SW03	BELL206	250C	C	D	7	C	5
S-890216001	SW03	BELL206	250C	C	N	3	N	1
S-890817130	SW03	BELL206	250C	C	N	3	N	10
S-890810034	SW15	369	250C	C	N	3	N	3
S-890112018	NM07	BELL206	250C	C	N	3	N	1

REPORT NO.	SUBMIT.	AIRCRAFT	ENGINE/ POSITION	COMPNT	FRAG. TYPE	CAUSE	CONTN. COND	FLT. COND
S-891221025	SW03	B0105	250C	C	N	2	N	5
S-891122032	SW09	BELL206	250C	C	N	2	N	5
S-890713151	SW03	B0105	250C	C	N	1	N	1
S-890209017	SW03	BELL206	250C	C	N	3	N	9
S-890629012	SW03	BELL206	250C	T	N	2	N	5
S-890209055	WP07	UNK	250C	T	N	2	N	1
S-890209011	SW03	BELL206	250C	T	N	2	N	1
S-890307080	SW17	BELL206	250C	T	N	7	N	1
S-890622044	SW03	BO105	250C	T	N	2	N	1
S-890202056	SW03	BO105	250C	T	N	3	N	1
S-890912109	SW03	B0105	250C	T	N	3	N	1
S-890830188	SW03	B0105	250C	T	N	3	N	1
S-890216002	WP07	UNK	250C	T	N	4	N	1
S-890216006	WP07	UNK	250C	T	N	4	N	1
S-890209058	WP07	UNK	250C	T	N	4	N	1
S-890209057	WP07	UNK	250C	T	N	4	N	1
S-890209056	WP07	UNK	250C	T	N	4	N	1
S-890209054	WP07	UNK	250C	T	N	4	N	1
S-890209053	WP07	UNK	250C	T	N	4	N	1
S-890209052	WP07	UNK	250C	T	N	4	N	1
S-890209051	WP07	UNK	250C	T	N	4	N	1
S-890209001	WP07	UNK	250C	T	N	4	N	1
S-890209002	WP07	UNK	250C	T	N	4	N	1
S-890216004	WP07	UNK	250C	T	N	4	N	1
S-890216005	WP07	UNK	250C	T	N	4	N	1
S-890209061	WP07	UNK	250C	T	N	4	N	1
S-890209060	WP07	UNK	250C	T	N	4	N	1
S-890208105	WP07	UNK	250C	T	N	4	N	1
S-890208106	WP07	UNK	250C	T	N	4	N	1
S-890208107	WP07	UNK	250C	T	N	4	N	1
S-890208108	WP07	UNK	250C	T	N	4	N	1
S-890208109	WP07	UNK	250C	T	N	4	N	1
S-890719082	SW03	BELL206	250C	T	N	1	N	1
S-890308048	SW03	BELL206	250C	T	N	1	N	1
S-891004010	NM02	BELL206	250C	T	N	7	N	5
S-890831036	SW03	BELL206	250C	T	N	1	N	1
S-890831027	SW03	BELL206	250C	T	N	1	N	1
S-890817110	SW03	BELL206	250C	T	N	7	N	1
S-890621094	SW03	BELL206	250C	T	N	1	N	1
S-890301026	SW03	BELL206	250C	T	N	1	N	1
S-890301025	SW03	BELL206	250C	T	N	1	N	1
S-890209010	SW03	BELL206	250C	T	N	1	N	1
S-890112016	NM07	BELL206	250C	T	N	1	N	1
S-890209050	WP07	UNK	250C	T	N	4	N	1
S-890209049	WP07	UNK	250C	T	N	4	N	1
S-890208110	WP07	UNK	250C	T	N	4	N	1
S-890831029	SW03	S76	250C	T	N	1	N	1
S-890831028	SW03	S76	250C	T	N	1	N	1
S-890216003	WP07	UNK	250C	T	N	4	N	1
S-890209016	SW03	S76	250C	T	N	7	N	1
S-890209018	SW03	S76	250C	T	N	7	N	1

REPORT NO.	SUBMIT.	AIRCRAFT	ENGINE/ POSITION	COMPNT	FRAG. TYPE	CAUSE	CONTN. COND	FLT. COND
S-89121500012	PAAA	A310	PW4152	C	B	7	C	4
S-890721192	PAAA	A310	PW4152	C	N	2	N	5
S-890601108	S003	C90	PT6A	C	B	7	C	4
S-890720077	CE01	C90	PT6A	C	B	7	C	5
S-890208083	SJSA	DHC6	PT6A	T	B	7	C	3
S-890801046	SUBA	A100	PT6A	T	B	7	C	1
S-890124036	GL25	E90	PT6A	C	B	7	C	5
S-890123048	PCAA	SD330	PT6A	T	B	7	C	1
S-89092200034	SIMA	SD360	PT6A	T	B	7	C	3
S-89102000151	CROA	SD330	PT6A	T	B	1	C	2
S-8912800014	SIMA	SD360	PT6A	T	B	7	C	7
S-90011900034	BHAA	1900C	PT6A	T	B	7	C	2
S-890124019	SW01	A100	PT6A	T	B	2	NC	5
S-890802005	S005	B200B	PT6A	C	B	7	C	5
S-890818177	SALA	SD330	PT6A	T	N	3	N	3
S-890825058	SWJA	1900C	PT6A	C	N	2	N	5
S-890929237	SWHC	1900C	PT6A	T	N	7	N	4
S-89102300107	SWHC	1900C	PT6A	T	N	2	N	1
S-890925195	SW15	300	PT6A	C	N	3	N	1
S-891116159	SW15	300	PT6A	C	N	3	N	1
S-890929190	PCAA	SD360	PT6A	C	N	3	N	3
S-890801069	GL19	A100	PT6A	T	N	7	N	5
S-890223098	SW01	PA31	PT6A	C	N	1	N	1
S-890208090	WTAA	EMB11	PT6A	T	N	2	N	5
S-890317011	MTXA	SD330	PT6A	C	N	5	N	1
S-891116079	SW15	300	PT6A	C	N	3	N	1
S-890925052	PCAA	SD360	PT6A	T	N	7	N	1
S-890201104	SW03	212	PT6A	T	N	7	N	1
S-891122061	SW03	412	PT6A	C	N	7	N	1
S-890217128	REXA	SF340	CT7-5	C	S	7	C	10
S-89120100050	MTRA	SF340	CT7-5	T	S	7	C	4
S-890623088	AMWA	SF340	CT7-5	C	N	3	N	5
S-890721137	AMWA	SF340	CT7-5	C	N	3	N	3
S-890721134	AMWA	SF340	CT7-5	T	N	5	N	2
S-890515228	REXA	SF340	CT7-5	T	N	2	N	5
S-891025038	EA03	25B	CJ610	C	N	3	N	3
S-891219011	GL23	23L	CJ610	T	N	2	N	1
S-890623015	EALA	B757	RB211	T	B	7	C	3
S-890414002	TWAA	L1011	RB211	T	B	2	C	4
S-890908016	TWAA	L1011	RB211	T	B	1	C	4
S-89112400071	AWXA	B757	RB211	T	B	7	C	3
S-890216088	TWAA	L1011	RB211	T	B	2	C	1
S-890719035	AMTA	L1011	RB211	T	B	1	C	3
S-890721176	TAEA	L1011	RB211	F	N	2	N	5
S-890814147	AMTA	UNK.	RB211	T	N	2	N	10
S-890825280	DALA	L1011	RB211	C	N	2	N	3
S-890828268	TAEA	L1011	RB211	F	N	2	N	4
S-890216089	TWAA	L1011	RB211	C	N	3	N	1
S-890206045	AMTA	L1011	RB211	F	N	7	N	4
S-890428038	NWAA	B757	PW2037	C	B	2	C	4
S-890616013	DALA	B757	PW2037	C	N	2	N	4

REPORT NO.	SUBMIT.	AIRCRAFT	ENGINE/ POSITION	COMPNT	FRAG. TYPE	CAUSE	CONTN. COND	FLT. COND
S-890922067	NWAA	B757	PW2037	C	N	2	N	5
S-890428130	IPXA	B757	PW2040	T	B	7	C	3
S-90020500070	IPXA	B757	PW2040	T	S	3	C	4
S-890103146	IPXA	B757	PW2040	F	N	3	N	3
S-890306051	RAXA	DC8	JT3D	T	B	7	C	10
S-890807186	PCTA	B707	JT3D/4	F	B	7	NC	3
S-89110300035	RAXA	DC8	JT3D	T	B	7	C	5
S-89120800009	RAXA	DC8	JT3D	C	B	1	C	2
S-89121800170	FWTA	B707	JT3D	T	B	7	C	3
S-90011200056	RAXA	DC8	JT3D	T	B	7	C	3
S-891222161	OGOA	DC8	JT3D/4	T	B	7	NC	4
S-890111014	PCTA	B707	JT3D	C	B	1	C	3
S-890223091	SW05	DC8	JT3D	C	B	7	C	5
S-890526008	RAXA	DC8	JT3D	C	B	7	C	5
S-890303035	RAXA	DC8	JT3D	C	N	2	N	1
S-890516042	ARWA	DC8	JT3D	T	N	7	N	5
S-890515155	RAXA	DC8	JT3D	T	N	7	N	5
S-89110300076	MIDA	B737	JT3D	F	N	3	N	3
S-89111700180	RAXA	DC8	JT3D	C	N	2	N	1
S-89122200161	OGOA	DC8	JT3D	T	N	7	N	4
S-890518107	SW07	DC8	JT3D	C	N	3	N	1
S-890518109	SW07	DC8	JT3D	C	N	3	N	1
S-890303019	USAA	BAC146	ALF502	T	B	1	C	4
S-89101300035	USAA	BAC146	ALF502	T	B	2	C	4
S-890127005	ASPA	BAC146	ALF502	T	B	1	C	3
S-890817029	NEO3	UNK.	ALF502	T	B	1	C	5
S-890428036	USAA	BAC146	ALF502	C	N	2	N	4
S-89102000018	USAA	BAC146	ALF502	C	N	3	N	7
S-890123070	WTAA	BAC146	ALF502	C	N	3	N	7
S-890817028	NEO3	UNK.	ALF502	C	N	7	N	1
S-890801062	EA11	CL600	ALF502	T	N	2	N	1
S-890801061	EA11	UNK.	ALF502	T	N	2	N	1
S-890824014	NEO3	UNK.	ALF502	T	N	1	N	1
S-890803107	EA11	CL600	ALF502	T	N	2	N	1
S-890417112	AWAA	BAC146	ALF502	T	N	2	N	5
S-890417077	AWAA	BAC146	ALF502	T	N	7	N	5
S-89010066	EA25	HS125	VIP601	T	B	7	C	1
S-890209094	EA11	HS125	VIP601	T	B	7	C	10
S-890601024	EA21	DH125	VIP601	T	N	7	N	7
S-890906182	GL09	SA365	ARRIEL1C	T	B	7	C	1
S-890126072	GL09	SA365	ARRIEL1C	T	N	7	N	1
S-890605005	AWAA	F27	DART	T	N	2	N	3
S-89111300052	UALA	DC10	CF6	T	B	2	C	5
S-890519077	WRLA	DC10	CF6/2	F	B	3	NC	3
S-89102000009	CALA	DC10	CF6	T	B	2	C	5
S-89112400060	UALA	DC10	CF6	C	B	3	C	3
S-90031600053	WRLA	DC10	CF6	T	B	7	C	5
S-890113127	UALA	DC10	CF6	C	B	7	C	3
S-890818009	UALA	DC10	CF6	F	N	3	N	4
S-89121800028	CMDF	DC10	CF6	T	N	2	N	4
S-890207134	EU51	DC10	CF6	F	N	3	N	1

REPORT NO.	SUBMIT.	AIRCRAFT	ENGINE/ POSITION	COMPNT	FRAG. TYPE	CAUSE	CONTN. COND	FLT. COND
S-890801054	ENPA	550	JT15D	T	B	7	C	6
S-890817045	ENPA	550	JT15D	T	B	6	C	1
S-890105195	EA21	500	JT15D	F	N	3	N	5
S-890601046	GL05	550	JT15D	F	N	3	N	1
S-890509031	GL05	550	JT15D	F	N	3	N	1
S-890209128	ENPA	550	JT15D	F	N	3	N	1
S-890614044	GL03	550	JT15D	C	N	7	N	1
S-890817133	GL09	550	JT15D	T	N	2	N	1
S-890124033	CE09	550	JT15D	T	N	2	N	1
S-890124032	CE09	550	JT15D	T	N	2	N	1
S-890509046	WP17	300	JT15D	T	N	2	N	1
S-890509035	GL13	550	JT15D	T	N	2	N	1
S-890502008	GL13	550	JT15D	T	N	2	N	1
S-89101300179	SRAA	L382	501/1	T	B	7	NC	5
S-89103000057	SRAA	L382	501/1	T	B	7	NC	5
S-890721005	SRAA	L382	501	T	N	7	N	4
S-890207092	MRKA	L382	501	C	N	3	N	10
S-890721054	ASPA	STCAP	501	T	N	2	N	4
S-890721004	SRAA	L382	501	T	N	7	N	4
S-90021200109	SRAA	L382	501	C	N	3	N	3
S-890509033	NM01	L35A	TFE731	T	B	7	C	5
S-891019049	EA21	L35	TFE731	C	N	2	N	5
S-890301001	BKXA	L35A	TFE731	T	N	7	N	4
A-890818049979C	CE03	DC9	JT8D/1	T	B	7	NC	4
A-890624033059C	EA27	B727	JT8D/2	C	D	7	NC	3
A-890719023719B	CE01	DC10	CF6/2	F	D	7	NC	5
A-891209064759C	WP21	DC9	JT8D/2	T	D	7	NC	4
A-890919037589A	GL03	BELL206	250C	C	B	7	NC	8
A-891004052259G	EA03	SA227	TPE331	T	B	7	NC	5

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